REMARKS

Applicant respectfully requests reconsideration of the present application in view of the reasons that follow.

A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier. No claims have been amended, canceled or added. Accordingly, claims 1-3, 7-13 and 17-20 remain pending in this application.

In the Office Action, claims 1, 7-11 and 17-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Srivastava (U.S. Patent No. 5,999,737) in view of Click, Jr. et al. (U.S. Patent No. 6,408,433). Claim 1 recites in part that a method for removing dead code in code fragments of a program comprises processing a first code fragment and storing first information generated during this processing indicative of whether an instruction for assigning a register in a first code fragment is possibly live. Claim 1 further recites that the first information includes a pointer to each instruction for assigning a register that is possibly live for an exit of the first code fragment and a first register mask having a plurality of positions, each position corresponding to a respective register, wherein a bit at a position is set if the respective register is assigned in an instruction pointed to by a pointer included in the first information.

As discussed in the Amendment filed on February 19, 2004, Click discloses that each bit of the register mask is set to indicate whether a particular register is valid with respect to a variable with which the register mask is associated (col. 7, lines 51-53). Further, in the embodiments disclosed in Click, either one or two bits may be set for each register mask (col. 7, lines 55-64). Quite clearly, Click does not disclose or suggest a first register mask having a plurality of positions, wherein a bit at a position is set if the respective register is assigned in an instruction pointed to by a pointer included in the first information (which is indicative of whether an instruction for assigning a register in a first code fragment is possibly live), as recited in claim 1. In other words, setting a bit to indicate whether a particular register is valid with respect to a variable with which the register mask is associated, as taught by Click,

is not the same as setting a bit if a register is assigned in an instruction that is possibly live. Since Srivastava also fails to disclose or suggest a first register mask having a plurality of positions, wherein a bit at a position is set if the respective register is assigned in an instruction pointed to by a pointer included in the first information, claim 1 and the claims depending therefrom are patentably distinguishable from any combination of Srivastava and Click.

In the Response to Arguments, the Examiner asserted that the Applicants argued against the references individually, which is improper where the rejection is based on a combination of references. More particularly, although the register masks of Click have nothing to do with whether or not a register is assigned in a code fragment before being read, the Examiner asserted that Applicants failed to consider the register masks of Click in combination with the dead code removal method disclosed by Srivastava. Instead, the Examiner has asserted that it would have been obvious to combine the teachings of Srivastava and Click and use register masks (as taught by Click) to support the correlation and dead code removal process (as taught by Srivastava).

In further support of this conclusion, the Examiner has asserted in the rejection that the combination would have been obvious because the liveliness information of Srivastava is used to correlate registers and instructions, and the register mask of Click specifies such information (such information apparently meaning liveliness information) as it applies to procedure calls. In addition, the Examiner has asserted that one of ordinary skill in the art would have been motivated to enhance the liveliness information of Srivastava with a register mask specifying the use of registers in procedure calls, as taught by Click, for the "purpose of providing further information from which to correlate registers and instructions."

First of all, Applicants strongly disagree with the Examiner's characterization of Click as teaching "a register mask specifying the use of registers in procedure calls." To support this characterization, the Examiner referred to column 1, line 54 to column 2, line 7 of Click. This section of Click, however, is in the Background of the Invention, and though it discusses calling conventions, there is nothing in this section that discloses or suggests using register masks. Rather, it discusses using prolog and epilog code. Moreover, as discussed above,

Click explicitly discloses that each bit of the register mask is set to indicate whether a particular register is valid with respect to a variable with which the register mask is associated, not the use of registers in procedure calls.

Further, while it is indeed improper to argue against references individually where the rejection is based on a combination of those references, it is similarly improper to use impermissible hindsight to combine references. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art (see MPEP § 2143.01). The fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness, nor is the fact that the claimed invention is within the capabilities of one of ordinary skill in the art sufficient to establish *prima facie* obviousness (see MPEP § 2143.01).

In this case, it is not clear why one of ordinary skill in the art would have been motivated to modify a system that discloses a method for removing dead code in fragments of a program (as taught by Srivastava) with a system that uses register masks to determine a live range of registers for the purpose of register allocation (as taught by Click). In other words, while Click suggests performing register allocation based on register masks that determine a live range of registers, there is no disclosure or suggestion in Click or Srivastava that the register masks serve any purpose for assisting in removing dead code in fragments of a program.

Nor does the Examiner's purported reason to combine satisfy the necessary motivation to modify the dead code removal process of Srivastava with the register masks of Click. In particular, there is no teaching, suggestion, or motivation found either explicitly or implicitly in Srivastava or Click of how the use of the register masks would enhance the liveliness information of Srivastava, nor how the use of the register masks would provide further information from which to correlate registers and instructions. The mere assertion that it would "enhance liveliness information" or "provide further information from which to

correlate registers and instructions," without any disclosure or suggestion from the cited references is not sufficient for making a *prima facie* case of obviousness.

Accordingly, for all of these reasons, the combination of Srivastava and Click set forth in the Office Action is improper, and claim 1 and the claims depending therefrom are patentably distinguishable from any valid combination of the two references. Claim 11, and the claims depending therefrom, are patentable for at least the same reasons as claim 1.

Claims 2 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Srivastava and Click in view of Mulchandani et al. (U.S. Patent No. 6,112,025) and claims 3 and 13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Srivastava and Click in view of Bacon et al. (U.S. Patent No. 6,041,179). These rejections are invalid as being based on the improper combination of Srivastava and Click, as discussed above.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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